Listing of Claims

Claims 1 - 20 (Canceled)

Claim 21 (Previously Presented): A system for controlling one or more properties of a sheet of material to be manufactured on a sheet-making machine comprising:

a plurality of actuators distributed in the cross-machine direction over said sheet of material, each actuator being operable to perform a first control action with a magnitude on a slice of said sheet of material, the actuator also being operable to perform a second control action to manipulate a cross-directional shape within said slice, each of said plurality of actuators being controllable to vary the properties of said sheet of material by varying both said magnitude and said cross-directional shape within said slice;

scanners distributed over said sheet of material to measure properties data about the properties of said sheet of material; and

a controller in communication with said scanners for calculating said first control action and said second control action for each of said plurality of actuators, and implementing said first control action and said second control action at each of said plurality of actuators such that said actuators co-operate to adjust the properties of said sheet of material to desired targets.

Claim 22 (Previously Presented): The system of claim 21 in which each of said plurality of actuators comprises a steam actuator having an outlet chamber for releasing steam to said sheet of material with the cross-direction position and dimensions of each outlet chamber being manipulatable to control said cross-directional shape within said slice.

Claim 23 (Previously Presented): The system of claim 22 in which said outlet chamber of said steam actuator includes at least one movable baffle plate which is movable to control said cross-direction position and dimensions of said outlet chamber.

Claim 24 (Previously Presented): The system of claim 21 in which each of said plurality of actuators comprises a steam actuator having an outlet chamber for releasing steam to said sheet of material and including a screen plate with openings there through covering

the outlet chamber and at least one movable plate, such that moving the at least one movable plate with respect to the screen plate acts to fully or partially obstruct openings in the screen plate.

Claim 25 (Previously Presented): The system of claim 21 in which each of said plurality of actuators comprises a steam actuator having an outlet chamber for releasing a flow of steam to said sheet of material including at least one air jet associated with said outlet chamber dischargable to control the shape of the steam flow.

Claim 26 (Withdrawn): The system of claim 21 in which each actuator comprises a nozzle for delivering a water spray atomized by air pressure to the sheet of material including means for adjusting the air pressure at the nozzle to control the shape of the water spray.

Claim 27 (Withdrawn): The system of claim 21 in which each actuator comprises a nozzle for delivering a water spray atomized by air pressure to the sheet of material including means for adjusting the air flow at the nozzle to control the shape of the water spray.

Claim 28 (Withdrawn and currently amended): The system of claim 21 in which each actuator comprises a nozzle for delivering a water spray atomized by air pressure to the sheet of material, the nozzle having ~~an~~ a water discharge opening and an air discharge opening that are adjustable by position with respect to each other to control the shape of the water spray.

Claim 29 (Withdrawn): The system of claim 21 in which each actuator comprises an induction heating coil for heating at least one of a pair of rolls to change the diameter of the at least one roll in order to vary the gap between the pair of rolls and thereby the thickness of a sheet of material passing between the rolls with each coil having multiple windings for generating magnetic fields whereby controlling the currents to each of the multiple windings controls the cross-direction shape of the actuator response.

Claim 30 (Withdrawn): The system of claim 21 in which each actuator comprises an induction heating coil for heating at least one of a pair of rolls to change the diameter of the

at least one roll in order to vary the gap between the pair of rolls and thereby the thickness of a sheet of material passing between the rolls, each heating coil being mounted for pivotable movement whereby adjusting the angle of the heating coil controls the cross-direction shape of the actuator response.

Claim 31 (Withdrawn): The system of claim 21 in which each actuator comprises an array of infrared heating lamps for heating the sheet of material whereby controlling the voltage of each heating lamp controls the cross-direction shape of the actuator response.

Claim 32 (Withdrawn): The system of claim 21 in which each actuator comprises a gas-fired infrared emitter matrix for generating infrared radiation to heat the sheet of material, the emitter matrix being heated by combusting gas and having screen plates with openings there through adjacent the emitter matrix, whereby moving the screen plates with respect to each other to fully or partially align or misalign openings in the screen plates acts to vary the gas supply to the emitter matrix to control the cross-direction shape of the actuator response.

Claim 33 (Canceled)

Claim 34 (Previously Presented): The system of claim 21, wherein each of said plurality of actuators is operable individually to perform said first control action and said second control action.

Claim 35 (Previously Presented): The system of claim 21, wherein each of said plurality of actuators is controllable to vary the properties of said sheet of material by simultaneously varying both said magnitude and said cross-directional shape within said slice, and wherein said controller implements said first control action and said second control action simultaneously at each of said plurality of actuators such that said actuators co-operate to adjust the properties of said sheet of material to desired targets.